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Bachelor in Fine Arts

Time – Intangible Tangible –

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Time – Intangible Tangible –

Lisboa, 2011

Resumo

Tempo - como entendemos esta noção? Segundo o dicionário Merriam-Webster, o tempo é "o período medido ou mensurável durante o qual uma ação, processo ou condição existe ou continua" e também "um continuum espacial que não é medido em termos de eventos que se sucedem do passado através do presente para o futuro.". Esta é uma explicação muito geral. Todos temos a percepção do tempo a qual tem sido interpretada em vários campos do conhecimento.

Conforme o tempo passa, a memória humana desaparece pouco a pouco. Às vezes, quando achamos conveniente, apagamos memórias desnecessárias, ou talvez em certas circunstâncias, recordamos certas memórias mais vividamente.
A vida humana e sua relação com o tempo são efêmeras, cada momento é uma entidade brilhante e preciosa.
Do meu ponto de vista, a sensação de estar apaixonado é um exemplo perfeito da idéia dessa relação efêmera com o tempo. Com o passar do tempo os sentimentos podem crescer e ser mais profundos, ou, por outro lado, a memória do amor pode desvanecer-se, para melhor ou para pior.

Para mim, a cor vermelha é a cor mais adequada para expressar o tempo. O vermelho em muitos objetos é uma cor fugaz sob influências ambientais. Como tal, a realização de experiências sobre o desvanecimento da cor foram essenciais para uma compreensão mais objectiva da passagem do tempo. Através de um processo de experiências científicas objetivas e experiências artisticas subjetivas, propus-me tornar o intangível intangível e, assim, substanciar os meus sentimentos.

Lisboa Portugal, Novembro 2011,
Chisa Kitajima

Abstract

Time--how do we understand this notion? According to the Merriam-Webster dictionary, time is “the measured or measurable period during which an action, process, or condition exists or continues,” and also “a non spatial continuum that is measured in terms of events which succeed one another from past through present to future.” This explanation is very general. Everyone knows about “time,” and it has been interpreted and understood in various fields.

As time passes, human memory fades little by little. Sometimes, we delete unneeded memories as we see fit, or perhaps under certain circumstances we will remember certain memories more vividly.
The human life and its relationship to time are ephemeral and therefore nothing can take their place from a philosophical point of view. Consequently, each and every moment is a brightly shining and precious entity.
From my point of view, the feeling of being in love is a perfect example of the idea of this ephemeral relationship to time. With the passage of time feelings might grow deeper and deeper, or on the other hand, the memory of love may fade for better or worse.

For me, the color red is the most suitable color for expressing time. Red in many objects is a fugitive color under environmental influences. I suppose that I consider red as a symbol of time by subjective methods within my own sensations. As such, conducting science experiments on fading are essential for understanding objectively. Through a process of objective experiments on fading and subjective experiments in art making, I set out to make the intangible tangible, and thereby substantiate my feelings.

Lisboa Portugal, November 2011,

Chisa Kitajima

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Introduction- the fade

Glass is the primary material I use in creating my artistic work. I want to create artistic reflections of my perception of somewhat intangible phenomenon, like the passing of time, the ephemera nature of life and the fleeting nature of memory. For me, glass is the optimal material to articulate the intangible because in many ways it is by its nature an intangible state of matter.

Merriam-Webster dictionary defines the word “fade” as follows, “(1) to lose freshness or brilliance of color,” … “(4) to change gradually in loudness, strength, or visibility. Synonyms of the word fade might be evanescent, fugacious, or fleeting as I imagine them in relationship to my art.
For me, the fade is a continuous fleeting momentary phenomenon, as in a gradually waning moon, a rainbow across the sky, layered images accumulated in the memory, or an affective musical harmony on the same phrase.

By utilizing fading, it might be possible to show an intangible phenomenon or interpret the passing of time in art. To this end, I worked through scientific experimental procedures related to fading to develop art work as tangible form. I found that painting materials evolve with time and that colors will gradually fade and that their surface will deteriorate. Textile dyes–colored by organic ingredients also fade. Through my scientific experiments, I found that there are tangible ways to measure the rather momentary nature of the color red objectively, and came to understand red as continually changing every moment.

As time passes, the surface of glass adsorbs moisture in the air, and the structure of glass begins to decompose from the inside. The glass begins to deteriorate from the moment the art making is complete. However, the inorganic red in the glass does not fade the way that organic colors do. But since the glass is deteriorating it logically stands to reason that the chemical composition of the glass is changing, thus affecting the part of the composition that is imparting the red color. The color may not be “fading” per se, but since there is a change that is happening, even if only very slowly, the glass is at once remaining the same and also changing. In other words, as time passes, the glass has preserved “a present of things past” and holds a “memory” in itself.

When light enters glass it has several effects, such as reflection, refraction, absorption and transmission. In every moment, glass is changing its expression with the effects of light, and potential meanings pile up. For me, those effects on the color are like a symphony of color, like layers

of orchestral music building and harmonizing with one another. Time is thus embodied, metaphorically speaking, through the phases of one's perception of color in the art work.

I believe that a deep red color like that of blood is particularly well suited to symbolize time in the present. For me, these characteristics of glass act to express intangible "time" as tangible "time" in my work. By combining my scientific experiments into fading and my thoughts on the symbolic nature of the color red which I will address in my results and discussion, I hope to show how a systematic approach to art and science can be used to explore ideas of things both tangible and intangible.

Experimental Procedure : fading –fundamental observations

My experimental procedure began by exploring my personal interests in art and science and trying to define a set of parameters. These parameters involved combining both scientific exploration and personal art making.

In order to better understand the physical realities of fading, I engaged in a series of experiments utilizing the following format. I began by exposing samples of organic materials on paper to natural sunlight. These samples were covered with clear acrylic boards to shield them from water and left outside from July 29 to August 26.

The result of this experimental (fig 1). I choose next 15 samples from all of 34 experiments, because those are good for an illuminating exploration.

Painting color, Colored paper samples

1. Colored paper / Cartolina Iris 185g : tomate
2. Red colored paper Cartolina Iris 185g : vermelho
3. Shoujouhi : J. Yellow Red / Mansell No, 7R 3.9/12 / Turner Acryl Gouche
4. Japanese water painting color / Orange Red / Gansai Pentel Co.,Ltd
5. Japanese water painting color / Red / Gansai Pentel Co.,Ltd
6. Hard pastel / Crimson 022 / Nouvel Carré Paste

Glass samples

7. Copper Red Powder K016 / colored glass side / 770℃ 15min
8. Copper Red Powder K016 / polished on clear glass side / 770℃ 15min
9. Carmine Red BP 7307 / High temp / colored glass side / 800℃ 20min
10. Red Brown BP 7309 / High temp colored glass side / 800℃ 20min
11. Borosilicate colored glass ROPEX Red / colored glass side
12. Borosilicate glass rods GA138 with Copper / 580℃ 45min
13. Borosilicate glass rods GA2380 with Copper & Silver / 580℃ 45min
14. Borosilicate glass rods GA202 with Cadmium/ 580℃ 45min
15. Borosilicate glass rods GA105 with Cadmium/ 570℃ 30min

The samples were measured using the CIE *L*a*b** (CIELAB) rectangular coordinate system to establish which pigments or colored papers displayed the greatest change under equal conditions. The CIELAB system is based on L*, a*, and b* axes. Thus we can describe the differences in

lightness,

△ L*, redness-greenness, △a*, and yellowness-blueness, △b*, between the standard and batch where the Greek symbol, △(delta), represents difference. By convention, positive differences mean that the batch has more of that variable than the standard.

The purpose of another experimental Procedure (fig. 2) is finding out the development color red as an artistic technique by controlling a time and temperature in kiln, using by 3 company of commercial borosilicate glasses, Northstar, Glass Alchemy Boromax® Colors and Ropex International Co., Ltd.,
I tried to develop color using 535℃ and 555℃, and 15 minute keep in the same kiln.

NOTE:

Colors printed in my results are shown only to illustrate the level of color change over time and do not necessarily represent the original colors. This is due to the nature of the printing process.

Results and Discussion

Thorough my experiments (fig.1) I was able to reinforce certain ideas regarding my artistic perception. Red in organic materials easily absorbs ultraviolet light, and as such fades very easily. Fading can be described as a phenomenon of changing chemical structures within organic materials caused by the absorption of ultraviolet rays, whereas with glass the color does not change under sunlight. It should be noted that there is a margin of error in the data. Colors which were measured by CIELAB Chromaticity Coordinates were not perfectly equal, but the main points of the experiment showed that the glass colors did not change, did not fade, and remained stable.

In addition, red brings interesting effects to glass by virtue of the difficulty in controlling the color characteristics (fig. 2). It is not easy to create a bright red color in this material. Many red glasses utilize metal compounds of copper or gold in order to impart color. These compounds form nano-particles within the glass matrix and are responsible for the visible color in the glass.
If the temperature goes too high in the process of creating the glass, the color fades away or becomes a dark brown or shade of gray. If the temperature is not high enough, the color may not be visible at all. It means that red colored glass is related to how it is heated even before completing the work.
Due to the difficulty in managing and creating these colors in glass, For me, these characteristics of red glass act to express intangible “time” as tangible “time” in my work.

Red is an important color symbolically across many cultures and throughout time. In Ancient China, red was considered a lucky color, symbolic of prosperity and health. Red is also associated with weddings in Chinese cultural traditions. It is the traditional color for heroic figures and bridal kimonos in Japan. In Japanese culture, red is a frequent symbol of “HARE”, it means a new beginning and celebration, as opposed to black which symbolizes a death and the dark. Red has other connotations concerning life and the color of the rising sun is the symbolic color of Japan. In Chinese and Japanese legend, the red string of destiny, also referred to as red thread of fate, is an invisible red string thought to be tied around the little finger of men and women who will one day marry each other.

However, just as red fades in organic compounds or the difficulty in creating red colors in glass, feelings of irrepressible passion and love change gradually with the process of time. For me, these ideas can be expressed symbolically in art, and the complicated nature of how the color red is interpreted leads me to see this color as particularly useful as an artist. Add to this the levels of symbolism that I can imagine based on the chemical complexities of making red glass and it becomes

apparent that there is no better color than red to act symbolically. Thus, I argue that red glass is the primary material for the representation of time and the emotion of love.

Art Works

Ceu, a moment in the landscape (fig. 3)

This work is my first project in Portugal. I was really impressed with the beautiful landscape in Portugal, like the creamy-colored sky, the gentle encompassing air.

Those small fused glass pieces, that got wet with water on the surface, reflect and glistened with the natural light. The water soaked into the ground little by little, and the light that passed through the glass pieces slowly percolates down through the soil at the same time.

I created this work to keep my reminiscence of the first impression of Portugal's beautiful landscape.

1 week (fig. 4)

This is my first project using the passage of time as an art. I gained a deeper interest about "Time" through this project, given as a project in the 1st year of the Master.

At the lecture, we investigated the artist who interested or inspired me, and from there we created art.

I choose three Japanese artists who are well-known all over the word, Takashi Murakami, Aya Takano and Kenji Yanobe, on the last day I also include the American artist Georgia O'Keeffe who I truly respect and I have seen many times at the museum, besides I read her biographical novel.

In the first 3 days, I researched and saw their work by the Internet and try to understand their felling, then I made 2 works with borosilicate glass and 1 work by drawing on the paper.

However, for me, creating art inspired in their work and their artistic ideas only with internet research was extremely difficult.

Therefore I choose Georgia O'Keeffe as I say above, because I know her works without researching by internet.

At the last day, I gathered these 4 works and created one installation as a one week project.

The motif of the picture is Pomegranate that given from my colleague Fernanda from her garden. She gave me the key for my works. This picture has a hidden meaning one of a symbol of Pomegranate 'feminism' and 'tough woman'.

The Rainbow – 108 composition (fig 5)

I tried to show the passage time and a moment time as an art work in this project.

In addition, I tried to research the corrosion as a scientific part. Those 108 blowing glass bubbles that containing a water changed the position, and changed those amount of water every day from MAY 12 to JUN 17, 2010.

For me, glass is the optimal material to articulate the intangible because in many ways it is by its nature an intangible state of matter. In this work, I made limits a number of bubbles, and created the size of the circle is linked the number of the bubble.

As time passes, the surface of glass absorbs moisture in the air, and the structure of glass begins to decompose from inside. The glass begins deteriorate from the art making is complete.
When natural light enters glass it has several effects, such as reflection, refraction, absorption and transmission. In every moment, glass is changing its expression with the effects of light, and potential meanings pile up. For me those effects on the color are like a symphony of the rainbow color, like layers of orchestral music building and harmonizing with one another.
Time is thus embodied, metaphorically speaking , through the phases of one's perception of color in this work.

Pomegranate (fig 6)

When I studied the sol-gel films containing metal NPs as a science project in the1st year very interesting result were gained from this experimentation
For me, the colors that were changing because of oxidation were important for my art as I was trying to show the passage time and a moment in time as an art project.
This work was painting with pomegranate juice over 4 days. Pomegranate was chosen because the natural juice of pomegranate. I wanted to keep the beautiful bright red color and I used lemon, trying to reduce the color change, but it was it just to delayed the oxidation process. However, a pomegranate juice putted on a salt kept bright color through the 4 days, like a Japanese "umeboshi" (a pickled plum). I wanted to keep a beautiful red color on canvas, but at the same time I would like to show the passing of time using the fading.

Time – Intangible Tangible – the solo graduate exhibition –

October 11- 21, Biblioteca da FCT / UNL. Campus da Caparica,

At the beginning of my study, there were two points that I was encouraged to understand, those being the definitions of art in the East and West. Previously, I didn't realize my own sensitivities as being particularly Japanese before coming to this university.
Another challenge was to understand shape in my art making and to create art with a sense of symbolism. I tried to understand these ideas through craft and as art.
Because I imagined craft products as the way to know the western culture I came to realize that there are some very real differences between eastern and western perception.

Before new moon (Fig 7)

The composition of the first work of my exhibition Time – Intangible Tangible, Title is, *Before new moon,* represents my own sensitivities as Japanese, as an Eastern perception.

The meaning of title, *Before new moon*, is linked the idea to the next moment and time. So that, the broken scientific glass vessel means that filled with the science memories, like a step of chemical tests, And those delicate glass flowers express the hope to the next science development.
The bottom of the layered sheet glasses were made by clashing the blowing glass bubbles used in my previous work, the *Rainbow – 108 composition*.

And also this pictures is the part of my previous work, that I painted with the pomegranate juice before. When I studied the sol-gel films containing metal NPs as a science project in the1st year. The very interesting result were gained from this experimentation. About this picture, Now 1 year and 5 month later, the color almost faded away, there is not any bright red in the picture. The reason why I used my previous work as the part of this project, I wanted to explain what is time through my art experience and be a creation of the researches over 2 years.

The inorganic red in the glass does not fade the way that organic colors do. But since the glass is deteriorating it logically stands to reason that the chemical composition of the glass is changing, thus affecting the part of the composition that is imparting the red color. The color may not be “fading” in itself, but since there is a change that is happening, even if only very slowly, the glass is at once remaining the same and also changing.

As time passes, the glass has preserved “a present of things past” and holds a “memory” in itself. As time passes, our human memory starts to fade little by little, as well the feeling of being in love might fade for better or worse. However, I wish to keep remain the feeling of being in love and it does not fade like the colored red glass, even when we get older like this picture.

The magic Time (Fig 8)

In this work *The magic Time,* I wanted to express the process of time through the feelings of irrepressible passion and love. As shown in the image on the right, some of the glass samples that resulted from experiments with the borosilicate red color, as well as the glass flower, are only faintly tinged with red. Through my scientific experiments, I found that there are tangible ways to measure the rather momentary nature of the color red objectively, and came to understand red as continually changing every moment.

Just as red fades in organic compounds or the difficulty in creating red colors in glass, feelings of irrepressible passion and love change gradually with the process of time. For me, these ideas can be expressed symbolically in art, and the complicated nature of how the color red is interpreted leads me to see this color as particularly useful as an artist. Thus, for me, red glass is the primary material for the representation of time and the emotion of love.

Red is an important color symbolically across many cultures and throughout time.
In Chinese and Japanese legend, the red string of destiny, also referred to as red thread of fate, is an invisible red string thought to be tied around the little finger of men and women who will one day marry each other. That is, the dyed yearn with faint red acrylic paint is symbol of the red string of destiny.
At the end, I wanted to explain the process of love putting the barely seen picture, engraved on the enameled glass sheet, on the faint pink colored canvas.

Enjoy the* Present *(Fig 9)

In the work *Enjoy the* Present I wanted to develop these bright colored reds, like blood. I believe that a deep red color like that of blood is well suited to symbolize time in the present. Through this work, I emphasized the joy of living, the will to live and the reason why I create art.

I tried to use my perception of the western, brightly colored and passionate. The flower-like shape, it is not just a flower, For me, it is life and passionate of love.
The canvas painted with acrylic colors almost 2 years ago, this picture color still remains bright red.

Honestly I feel something is still missing in this work, but I don’t know what is. In this moment, this work is my best to explain with the western feelings.
Actually, I must admit that it is unclear whether or not I fully understand the extent of the differences between east and west. I suppose this is a topic I should think on more deeply.

Conclusions

"What then is time? If no one asks me, I know: if I wish to explain it to one that asketh, I know not." This is well known quotation from St. Augustine's ‘Confessions’; everybody knows about time, but it is no easy matter to explain it. Therefore concepts of time have become an essential theme in philosophy, natural science, psychology, and art.

At the beginning of my study, there were two points that I was encouraged to understand, those being the definitions of art in the East and West. Previously, I didn’t realize my own sensitivities as being particularly Japanese before coming to this university. Another challenge was to understand form in my art making and to create art with a sense of symbolism. I tried to understand these ideas through craft and as art. Because I imagined craft products as the way to know the western culture I came to realize that there are some very real differences between eastern and western perception. Honestly, I must admit that it is unclear whether or not I fully understand the extent of these differences, and I suppose this is a topic I should think on more deeply. However, through my research I gained a deeper interest into the relationship between the passage time and human emotion and the feelings of passionate and love. If occasion offers I will keep researching these relationships as an artist and will become more intimately involved in the artistic expression symbolically. The differences between East and the West in ideas of art will continue to hold sway over my art making, and my explorations into fading, science, and art will no doubt become increasingly influential.

Appendix

Figures and Tables

Figure 1 CIELAB RESULTS

1. Colored paper / Cartolina Iris 185g : tomate

July 29, 2011

August 11, 2011

August 26, 2011

	L	a	b
29.Jul	52.07	54.37	32.95
4.Aug	52.57	52.01	30.92
8.Aug	54.01	49.44	30.10
11.Aug	55.21	47.73	29.14
16.Aug	56.75	45.83	28.08
19.Aug	57.07	45.42	28.01
22.Aug	57.47	45.21	27.83
26.Aug	58.25	43.73	26.84

2. Red colored paper Cartolina Iris 185g : vermelho

July 29. 2011

August 11, 2011

August 26, 2011

	L	a	b
29.Jul	43.06	49.10	18.63
4.Aug	43.70	46.35	17.03
8.Aug	45.20	44.86	16.32
11.Aug	46.36	44.06	16.30
16.Aug	47.50	42.98	15.56
19.Aug	48.08	42.56	15.35
22.Aug	48.23	42.40	15.31
26.Aug	48.69	41.48	14.91

3. Shoujouhi : J. Yellow Red / Mansell No, 7R 3.9/12 / Turner Acryl Gouche

July 29, 2011

August 11, 2011

August 26, 2011

	L	a	b
29.Jul	45.05	55.17	32.53
4.Aug	44.82	54.74	32.10
8.Aug	45.08	54.96	32.24
11.Aug	45.28	55.09	32.25
16.Aug	45.28	55.01	32.17
19.Aug	45.43	55.23	32.43
22.Aug	45.51	55.20	32.35
26.Aug	45.42	55.17	32.27

b

4. Japanese water painting color / Orange Red / Gansai Pentel Co.,Ltd

July 29. 2011

August 11, 2011

August 26, 2011

	L	a	b
29-Jul	49.43	61.95	38.59
4-Aug	51.20	60.22	31.30
8-Aug	55.63	55.22	17.76
11-Aug	59.97	49.46	8.82
16-Aug	66.68	39.46	0.62
19-Aug	70.82	33.24	-1.97
22-Aug	72.76	30.09	-2.53
26-Aug	81.38	16.33	-3.35

5. Japanese water painting color / Red / Gansai Pentel Co.,Ltd

July 29, 2011

August 11, 2011

August 26, 2011

	L	a	b
29.Jul	40.96	58.79	26.06
4.Aug	41.58	57.54	21.17
8.Aug	43.29	57.16	16.63
11.Aug	44.08	56.75	14.56
16.Aug	45.83	55.93	11.66
19.Aug	46.87	55.70	10.59
22.Aug	47.36	55.36	10.01
26.Aug	49.28	53.71	7.49

6. Hard pastel / Crimson 022 / Nouvel Carré Paste

July 29. 2011

August 11, 2011

August 26, 2011

	L	a	b
29-Jul	49.30	56.82	19.90
4-Aug	52.11	50.91	15.93
8-Aug	56.16	46.03	10.83
11-Aug	58.59	42.09	9.04
16-Aug	62.04	36.97	7.18
19-Aug	63.48	34.83	6.57
22-Aug	64.11	33.70	6.21
26-Aug	65.88	31.36	5.62

7. Copper Red Powder K016 / colored glass side / 770℃ 15min


July 29, 2011


August 11, 2011


August 26, 2011

	L	a	b
29-Jul	12.33	6.29	0.95
4-Aug	12.89	6.12	0.83
8-Aug	11.93	6.54	1.38
11-Aug	11.57	6.57	1.43
16-Aug	11.64	6.65	1.39
19-Aug	11.83	6.47	1.43
22-Aug	12.36	6.36	1.33
26-Aug	12.25	6.30	1.24

8. Copper Red Powder K016 / polished on clear glass side / 770℃ 15min


August 11, 2011


August 26, 2011

	L	a	b
11.Aug	8.48	9.28	2.51
16.Aug	7.81	9.81	2.49
19.Aug	8.22	9.49	2.64
22.Aug	8.88	9.14	2.34
26.Aug	8.27	9.52	2.47

9. Carmine Red BP 7307 / High temp / colored glass side / 800℃ 20min


July 29, 2011


August 11, 2011


August 26, 2011

	L	a	b
29.Jul	23.24	34.90	17.68
4.Aug	23.52	34.53	17.60
8.Aug	23.16	34.72	17.85
11.Aug	23.04	34.53	17.60
16.Aug	23.09	34.66	17.70
19.Aug	23.20	35.29	18.07
22.Aug	23.48	34.78	17.37
26.Aug	23.28	35.14	17.76

10. Red Brown BP 7309 / High temp　colored glass side / 800℃ 20min

July 29, 2011

August 11, 2011

August 26, 2011

	L	a	b
29.Jul	44.42	60.18	53.56
4.Aug	44.24	60.40	53.99
8.Aug	44.07	60.26	54.13
11.Aug	44.36	60.47	54.28
16.Aug	44.54	60.25	52.37
19.Aug	44.46	59.92	51.95
22.Aug	44.56	60.19	53.68
26.Aug	44.31	60.36	53.87

11. Borosilicate colored glass ROPEX Red / colored glass side

July 29. 2011

August 11, 2011

August 26, 2011

	L	a	b
29-Jul	29.81	14.23	9.06
4-Aug	29.78	16.34	10.92
8-Aug	29.58	16.88	11.15
11-Aug	29.62	17.04	11.48
16-Aug	29.46	17.39	11.52
19-Aug	29.83	16.87	11.46
22-Aug	30.33	16.11	10.60
26-Aug	29.98	15.97	10.58

12. Borosilicate glass rods GA138 with Copper / 580℃ 45min

August 11, 2011

August 26, 2011

	L	a	b
11.Aug	42.61	26.16	31.20
16.Aug	41.63	26.78	31.58
19.Aug	42.26	26.32	31.39
22.Aug	43.07	26.02	32.81
26.Aug	42.00	26.60	31.70

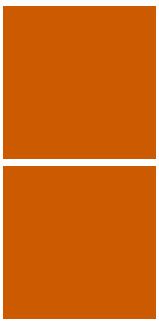
13. Borosilicate glass rods GA2380 with Copper & Silver / 580℃ 45min

August 11, 2011

August 26, 2011

	L	a	b
11.Aug	37.53	17.97	9.79
16.Aug	36.52	18.56	9.13
19.Aug	37.46	18.02	9.48
22.Aug	38.57	17.51	11.26
26.Aug	37.53	18.10	10.17

14. Borosilicate glass rods GA202 with Cadmium/ 580℃ 45min



August 11, 2011

August 26, 2011

	L	a	b
11.Aug	51.92	42.96	73.33
16.Aug	51.74	43.31	76.49
19.Aug	51.88	43.15	75.42
22.Aug	52.03	43.13	75.75
26.Aug	51.83	43.12	76.18

15. Borosilicate glass rods GA105 with Cadmium/ 570℃ 30min

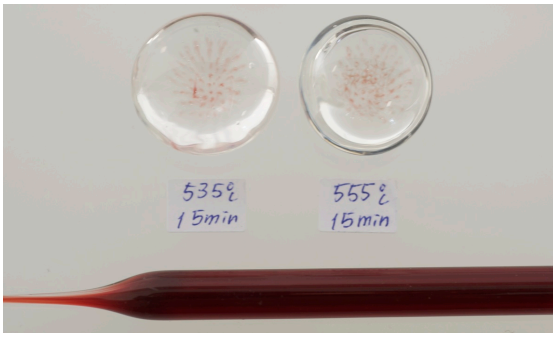
August 19, 2011

August 26, 2011

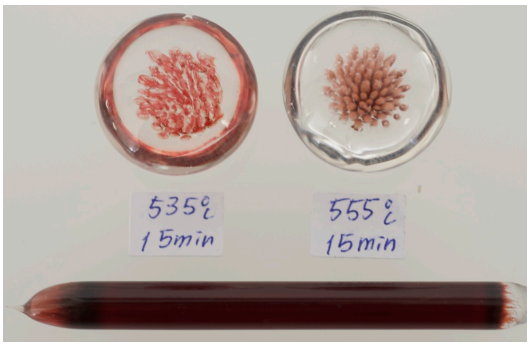
	L	a	b
19.Aug	25.27	35.75	22.07
22.Aug	25.70	35.73	21.95
26.Aug	25.24	36.43	22.86

Figure 2 Borosilicate glass color development

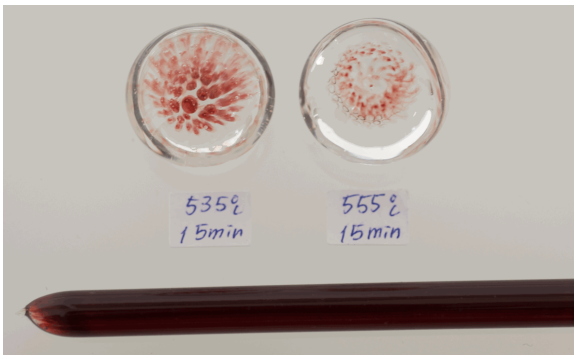
1. Northstar NS-07L Light Ruby



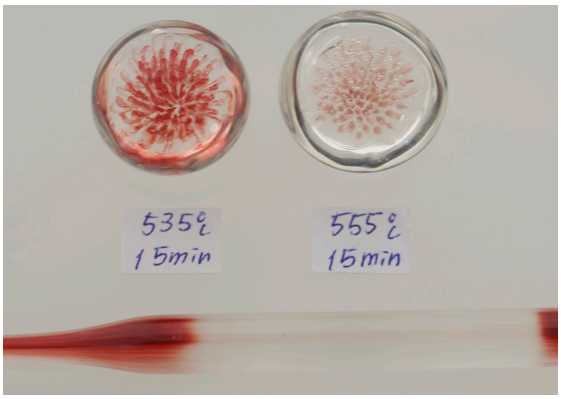
2.Northstar NS-08 Dark Ruby



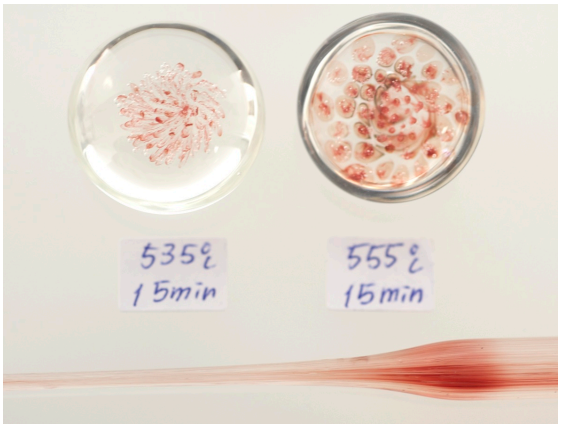
3. Northstar NS-82 Ruby K



4. Glass Alchemy GA138 Ruby Strike 4



5. Glass Alchemy GA139 Cherrywood



6. Ropex Red

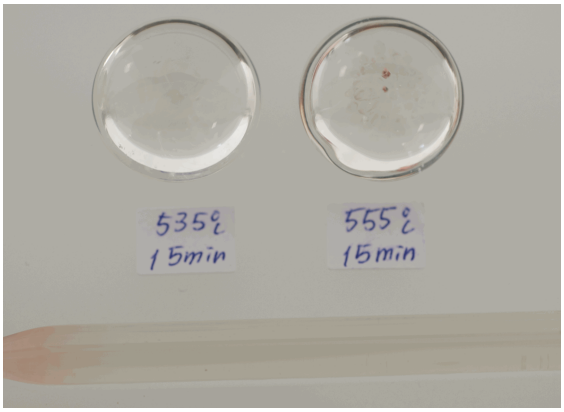


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Figure 3 - *Ceu, a moment in the landscape*,

Oct 2009, (30 x 30 x 30 cm), Fused glass, water, earth

Figure 4 - *1 week* ,

Nov 2009, (150x 50 x 20 cm) Acrylic painting, paper, Borosilicate glass, hammer

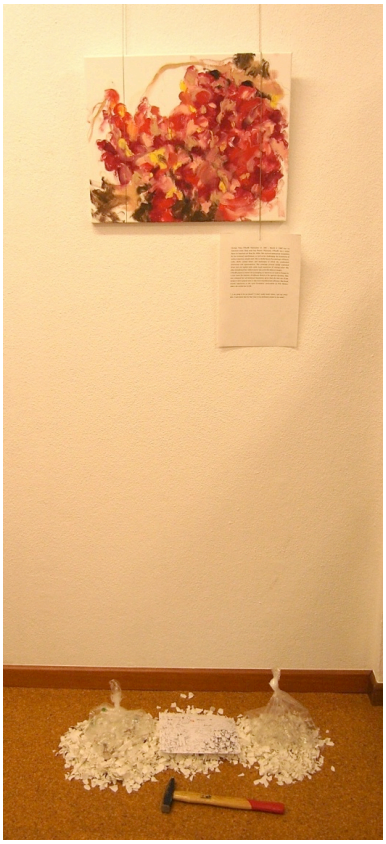

Figure 5 - The Rainbow – 108 composition,

May 12 - Jun 17, 2010, glass, water, sand, natural light.

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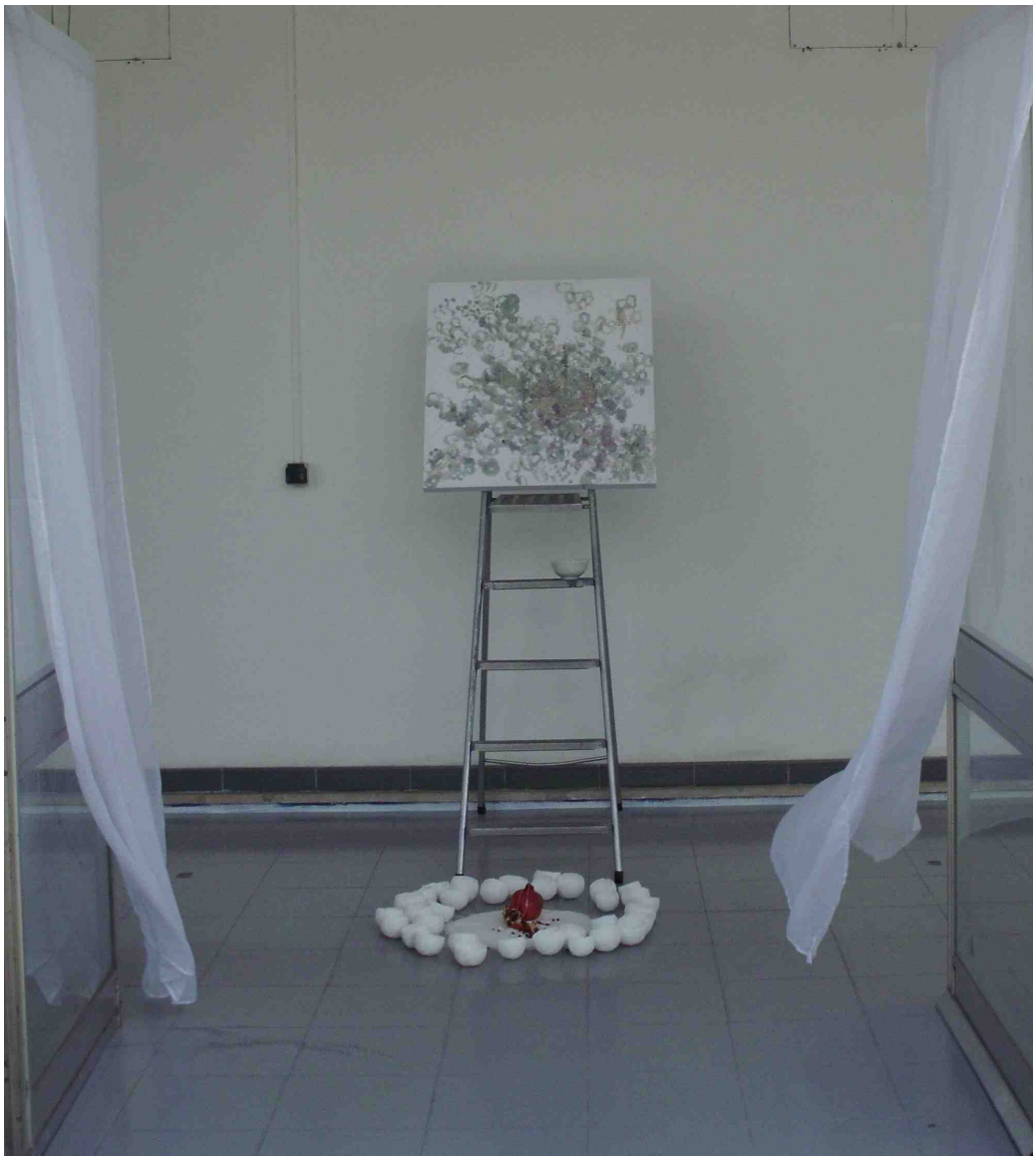
Figure 6 – *Pomegranate,*

Jun 17, 2010 , (120x 50 x 50 cm) , Pomegranate, borosilicate glass, stairs, salt, cotton cloth.



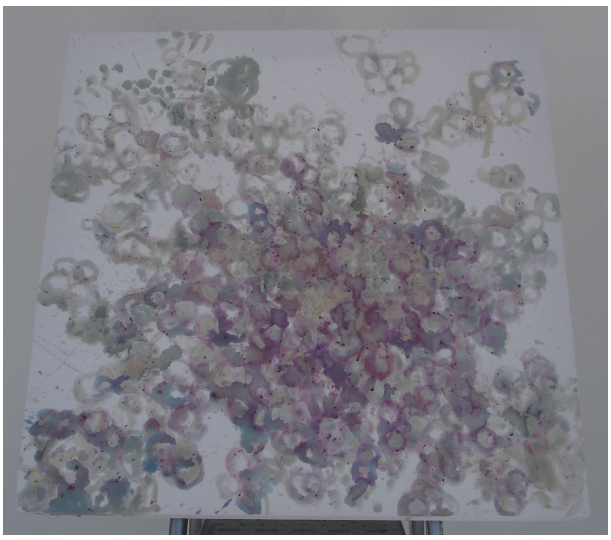


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Figure 7 – *Before new moon,*

Out, 2011, (250×180×90cm), borosilicate glass, soda-lime glass, juice of pomegranate, plume grass, straw,

Figure 8 – The magic time

Out, 2011, (200×120×60), borosilicate glass, sheet glass, glass enamel, canvas, yarn, mirror

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Figure 9 – Enjoy the present, Out, 2011, (150×100), borosilicate glass, acrylic paint, thread, nail,

p

q

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